APPENDIX B
ODOR IMPACT MINIMIZATION PLAN

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Odor Impact Minimization Plan

Altamont Landfill Resource Recovery Facility

August 2016

Prepared for:
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REPORT CERTIFICATION

Odor Impact Minimization Plan

Altamont Landfill Resource Recovery Facility
Livermore, California

The material and data in this report were prepared under the supervision and direction of the undersigned.

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1 INTRODUCTION

This Odor Impact Minimization Plan (OIMP) for the covered aerated static pile (CASP) compost facility, owned and operated by Waste Management, Inc., (WM) at the Altamont Landfill and Resource Recovery Facility (ALRRF) located in Livermore, California has been developed to provide guidance to on-site personnel in the handling, storage, and removal of compostable materials, in accordance with the California Code of Federal Regulations (CCR) Title 14, Division 7, Chapter 3.1, Article 3, Section 17863.4. This OIMP will be revised as necessary to reflect changes in the design or operation of these processes. A copy of the revisions will be provided to the County of Alameda Environmental Health Department, the Solid Waste Local Enforcement Agency (LEA), within 30 days of the changes. In addition, this OIMP will be reviewed annually by WM to determine if revisions are necessary.

2 ODOR MONITORING PROTOCOL

2.1 Proximity of Odor Receptors

The closest receptors are on-site personnel who perform daily monitoring of the status of operation at the facility. The closest offsite receptors are those at the Summit Garage, which is approximately one mile southwest of the perimeter of the facility. The closest residences include Bethany Village, which is approximately five miles east of the perimeter of the facility; and the residential development adjacent to Frick Lake, which is approximately four miles southwest of the perimeter of the facility.

2.2 Method for Assessing Odor Impacts

Each day, the operator will evaluate on-site odors and operations for potential release of objectionable odors. Best Management Practices (BMPs) and good housekeeping measures are implemented to minimize the release of objectionable odors. BMPs include: regular monitoring of temperature within the compost piles, and ongoing maintenance of piping, blowers, traps and cover material. Good housekeeping measures include: eliminating areas with the potential for ponding water, load checking, prompt processing of feedstock containing food waste, and maintaining reasonably-sized stockpiles of feedstock and chipped material. The procedures in Table 1 are used to assist in identifying and mitigating odors.

If objectionable on-site odors are detected, ALRRF will implement the following:

- Investigate and determine the likely source of the odor.
- Determine if on-site management practices could remedy the problem and immediately take steps to remedy the situation.
- Determine whether or not the odor is traveling beyond the site by patrolling the site perimeter and noting existing wind patterns.
- Determine whether or not the odor is significant enough to warrant contacting the adjacent neighbors and/or the LEA.

3 METEOROLOGICAL CONDITIONS (INCLUDING SEASONAL VARIATIONS)

3.1 Wind Velocity and Direction

Predominant wind direction at ALRRF is south (S). In the summer and fall, the seasons when odor issues are most likely, the predominant wind direction is west-southwest (WSW).

Predominant wind conditions with direction and speed were obtained from Weather Underground using the East Bay Radio Controller Field Station located less than four miles from ALRRF. The predominant wind conditions are summarized in Table 2 with data from August 2015 through July 2016. The data indicates that on an annual basis, the predominant wind direction is SSW at an average 5.7 miles per hour (mph). A wind rose showing the distribution of wind direction in 2006 is included as Figure.

ALRRF maintains an on-site meteorology station that monitors wind direction, wind speed, temperature, and relative humidity. Data from this station may be used to help monitor conditions if an odor issue arises or prior to an issue occurring.

4 COMPLAINT RESPONSE PROTOCOL

In the event that a complaint is received, ALRRF will:

- Go to the location of the complaint to verify that the on-site location is responsible for the odor.
- Investigate the nature of the source of the odor complaint and implement operational changes to minimize odors.
- If warranted, meet with the LEA and complainant (if known and choosing to participate) within a reasonable time frame to discuss the nature of the source of the odor and operational changes proposed and/or implemented.
- Document the complaint and actions taken in the Log of Community Concerns and Complaints to minimize odors in the future. See Table 3 for a template of this log.

5 DESIGN CONSIDERATIONS FOR MINIMIZING ODORS

In order to minimize the development of conditions that could lead to odor problems, the compostable material handling areas of the CASP facility were designed based on the nature and quantity of materials to be received and stored, the adjacent land use, and drainage controls.

5.1 Feedstock Characteristics

The feedstock material received at ALRRF as they are defined in CCR Title 14, Article 1, Section 17852(a)(19) will include green waste, clean dimensional lumber, agricultural materials (such as grape pomace and animal manures), residential and commercial food waste, mixed solid waste organics diverted from MSW recycling, and potentially digestate from anaerobic organics processing facilities. The feedstock will be the organic fraction of processed organics from MSW recycling.

5.2 Process Water Distribution

The feedstock processing areas and compost piles are frequently monitored to ensure adequate moisture content levels and dust control are addressed. Other than rainfall, water is generally not added to the feedstock or active compost piles during the winter months. During the warmer summer and fall months, water is used to spray on an as-needed basis for the composting materials handling operations (loading, unloading, stockpiling, mixing, turning, and screening) for dust and moisture content management of the feedstock processing areas and compost piles.

5.3 Compost Pad, Site Drainage, and Permeability

The CASP facility has a compost area graded to drain and conveys runoff to a contact water impoundment. Stormwater collection facilities to address contact water will be constructed; the active compost area has been graded to allow for drainage towards a new stormwater holding pond. Runoff collected in this pond can be utilized for composting operations as outlined in the Report of Composting Site Information (RCSI).

5.4 Equipment Reliability

All processing equipment is maintained per the manufacturer's recommendations. Heavy equipment and water trucks are maintained per WM's comprehensive preventive maintenance program. Rental equipment and third party contractors are readily available in the event of prolonged downtime of site equipment.

5.5 Weather Event Impacts

Heavy rainfall and/or wind are not uncommon weather events at ALRRF and could impede processing activities. There is adequate storage space available if operations have to temporarily cease due to adverse weather conditions.

5.6 Method and Degree of Aeration

A covered pile aeration system is in place to assist with minimizing the potential for odors. Aeration is achieved through perforated pipes underlying each compost pile in line with a blower system that provides forced air to the compost piles. The blower system is capable of providing adequate aeration to maintain aerobic conditions throughout the active composting phase.

5.7 Moisture Content of Materials

Green waste at ALRRF is currently received from the general public, curbside collection, and commercial programs. The compost feedstock at ALRRF is predominately composed of tree prunings, leaves, grass clippings, agricultural wastes, manure, and food wastes. Optimum moisture content for the compost piles is approximately 50 percent.

Most of the green waste material received consists of a combination of woody materials (low moisture content); brush and grassy materials (higher moisture content). Residential and commercial mixed green waste and food waste are slightly higher in moisture content and help balance the lower moisture content of the other portions of the feedstock that are drier. Loads of commercial food waste and mixed waste may also be received which could contain very high moisture content materials, including liquids, and will be used to increase the moisture content of the drier feedstock materials.

All feedstock is mixed together during processing. After the raw incoming feedstock is ground and mixed, water or other approved liquids will be added until an approximate moisture content of 50 percent is reached.

5.8 Airborne Emission Production

The CASP composting process allows for better airborne emissions control in comparison to traditional composting methods, through the underlying pipe system that provides positive aeration during the active composting process.

During positive aeration of the piles, the air is filtered by passing through the six-inches to 12-inches of cured compost layer that covers each compost pile, providing an integral biofilter cover.

Fugitive dust is controlled through on-site visual monitoring and the use of a water truck that provides dust control as necessary at ALRRF. As discussed above, when needed due to lack of rainfall or during the hotter months, the compost piles will be sprayed with water to control dust.

5.9 Personnel Training

Personnel on-site have been trained in subjects pertinent to the site operation and maintenance, such as OIMP, load checking procedures, and heavy equipment operations. Records of employee training are maintained on-site.

5.10 Utility Service Interruptions

Equipment utilized in the composting operation, including loader, grinder, water truck, and screener, are powered by diesel fuel; potential power outages would not affect the equipment used at the compostable materials handling facility (CMHF) operation. Two 12,000 gallon fuel storage tanks are maintained on-site.

An electricity-powered set of blowers supplies aeration to the CASP operation. A backup blower may be included in the aeration system should a primary blower have mechanical problems.

In the event of a power service interruption, the electric powered blowers will not be able to be powered by generators. Bucket loads will be used to turn the piles in the event the material is not able to be aerated after seven days.

5.11 Site Specific Concerns

ALRRF has no site specific concerns.

6 OPERATING PROCEDURES FOR MINIMIZING ODOR

Operations at the CASP facility that have the potential to create odors are the unloading of raw feedstock from incoming trucks, mixing, grinding, screening of the feedstock, and formation of new and dismantling of existing compost piles. During times when conditions are such that these operations result in off-site odors, ALRRF personnel will defer or modify these operations until conditions improve.

6.1 Aeration

As stated in Section 5.8 above, an aeration system has been designed to provide adequate oxygen or removal of gases from the compost piles in order to create a suitable environment for active composting.

6.2 Moisture Management

When building compost piles to be operated as the CASP process dictates, the optimum moisture content is approximately 50 percent. If the feedstock material is too dry, water is added to bring the moisture content up to 50 percent or a larger percentage of food wastes, which are generally higher in moisture content, will be added to the mixture. ALRRF personnel are familiar with the "squeeze test" to determine roughly if feedstock and active compost require additional moisture. If the moisture content is too high, positive pressure will be applied to further aerate the compost piles. Maintaining the proper moisture content assists in abating odors.

6.3 Feedstock Quality

The feedstock consists of tree prunings, leaves, grass clippings, agricultural wastes, manure, mixed solid waste and food wastes. If significant odors occur from the feedstock pile, a new compost pile will immediately be built. If it is not possible to build a new compost pile (e.g., due to a machine breakdown) or if it is determined that a significant odor problem will still occur, the material will be mixed with other materials on-site, including curing compost piles if necessary and reprocessed. A last-case option would be to landfill the material with approval from the LEA if no other options are available.

6.4 Airborne Emission Controls

Refer to Section 5.8 for airborne emission design considerations and controls.

6.5 Drainage Controls

Refer to Section 5.3 for site drainage design considerations and controls.

6.6 Compost Pad Maintenance

The compost pad has been engineered and constructed to accommodate larger material handling equipment and materials storage with minimal maintenance. Maintenance is accomplished by filling in ruts with crushed concrete or other durable materials and scraping routinely or as needed. These practices will help prevent ponding, therefore minimizing odors and the attraction of vectors.

6.7 Process / Wastewater Controls

In the event that stormwater is allowed to pond, ponded water will be absorbed with wood chips or other absorbent. Ruts will be filled and grading will be improved to promote drainage.

Contact water pond controls will be utilized in order to minimize odors within the new contact water pond as necessary. Efforts may include the use of aeration within the pond water, introduction of new stormwater to dilute the pond water, as well as pumping of the contents of the pond back into the active compost area for moisture conditioning of feedstock.

6.8 Material Processing, Handling, and Storage Practices

6.8.1 Processing

6.8.1.1 Feedstock

Incoming green wastes are typically processed within 72 hours.

6.8.1.2 Processed Material

Active composting piles will remain on the pad for three to five weeks prior to moving to the curing area. The range in time of active composting will depend on feedstock, temperature, moisture content, and the season of the year. After composting, the material is cured for approximately one to four months. Therefore, the average process time (including preparation, processing, active composting, and curing) to convert the incoming materials to compost ranges from eight and a half to 21 weeks.

6.8.2 Pile Geometry

6.8.2.1 Feedstock

Incoming feedstock loads can vary depending on season. Generally, the feedstock piles are typically kept within a height of 12 feet and the footprint minimized to help reduce vectors. The tipping and storage area for the inbound feedstock will be located near the CASP to be

filled, with a traffic lane on the north and south sides for access. The grinder is on tracks and will move as the feedstock pile moves along the CASP.

6.8.2.2 Processed Material

Compost pile dimensions will vary dependent on operations in the area of the piles, operational equipment dimensions and total feedstock intake rate. Typical compost piles may be approximately 85 feet in length, 30 feet in width, and 12 feet in height (11.5 feet of feedstock with six inches of cover on top). This equates to approximately 1,200 cubic yards per compost pile.

Curing pile dimensions will vary dependent on space available, time of year, and if it is determined that the piles will need to be moisture conditioned and turned frequently. Typical curing pile dimensions will be up to 18 feet high and 20 feet wide. Length of the piles will vary depending on the location of the pile within the curing area footprint.

6.9 Weather Event Impact

Refer to Section 5.5 for weather event impacts.

6.10 Contingency Plans

6.10.1 Fire Prevention

As part of maintaining good control of the composting process and demonstration of pathogen reduction, ALRRF will monitor the temperature of the compost piles in addition to other key parameters. If allowable temperatures of the CASP piles are exceeded, moisture will be added to maintain good composting conditions well before unsafe temperatures are reached. The design of the composting facility includes appropriately designed fire lanes, which allow access of fire control equipment to all operational areas.

Operations personnel will routinely review fire prevention and protection BMPs in their periodic safety meetings, including procedures for incident assessment and timely notification of the Alameda County Fire Department as appropriate. Any fire that may occur at the composting facility will be extinguished by the ALRRF trained personnel and/or the Alameda County Fire Department. Ample water supplies and equipment are available for fire suppression.

Additional details may be found in the CASP compost facility Fire Prevention , Control ad Mitigation Plan (2016).

6.10.2 Water Supply

ALRRF maintains a water truck, access to the city water line and has a supply of water stored in two aboveground tanks.

6.10.3 Equipment

In the event of equipment breakdown, an on-site mechanic or a contract mechanic will be available to fix the problem in a timely manner. If the equipment cannot be fixed in a timely manner, ALRRF will consider the following: hiring a third-party contractor to carry out processing; renting equipment; or borrowing equipment from a sister company.

6.10.4 Power

All equipment, with the exception of the blower system, is powered by diesel, and fuel storage tanks are maintained on-site. Should a power failure occur, Pacific Gas and Electric (PG&E), the electricity provider, will be contacted immediately. Bucket loaders will be used to turn the piles in the event the material is not able to be aerated after seven days.

6.10.5 Personnel

ALRRF personnel will provide assistance in the event of an emergency or have been instructed to call 911.

6.11 Personnel Training

Refer to Section 5.9 for Personnel Training.

6.12 Load Enclosure / Tarping

Incoming feedstock emitting malodorous odor when received will be immediately covered with curing compost or other appropriate materials, mixed in with other feedstock to mitigate the odors, or tarped. Alternatively, a request will be made to landfill the material.

REFERENCES

Cornerstone Environmental Group, 2016. Fire Prevention, Control and Mitigation Plan, Covered Aerated Static Pile Composting Operation, Altamont Landfill Resource Recovery Facility, August.

Cornerstone Environmental Group, 2016. Report of Composting Site Information, Altamont Landfill Resource Recovery Facility, August.

Weather Underground, 2016. "Station: East Bay Radio Controller Field." from https://www.wunderground.com/personal-weather-station/dashboard?ID=KCALIVER24#history/s20150801/e20160801/myear _Accessed August 6.

TABLES AND FIGURES

TABLE 1 – SOURCES OF ODOR AND POSSIBLE MANAGEMENT TECHNIQUES

Source of Odor	Possible Cause	Management Approach
Feedstock Receiving	Material sitting too long prior to processing	Expedite material processing
Feedstock Receiving	Incoming feedstock malodorous when received	Request from feedstock generator to landfill the material; alternatively, immediately cover , mix with other materials, or tarp the material
Compost Pad	Stormwater allowed to pond	Absorb ponded water with wood chips/other absorbent, fill ruts, improve grading and/or material arrangement to promote drainage
Stockpiles and compost piles	Anaerobic conditions; too much moisture	Check blower system operation
Curing Piles	High temperatures in windrows	Decrease pile size, turn curing pile or blend with other curing piles, or increase composting time prior to moving to curing

TABLE 2 – PREDOMINANT WIND SPEEDS AND DIRECTIONS

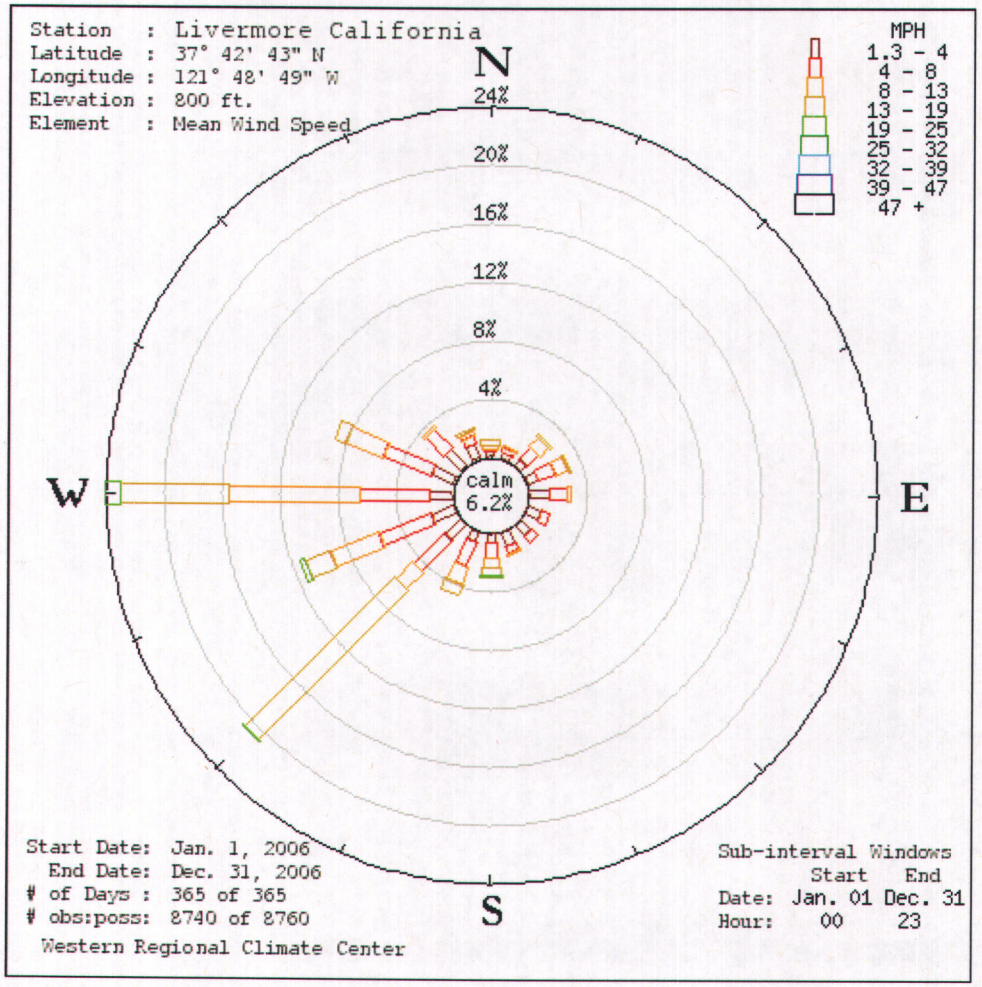
Time Period	Average Speed (MPH)	Direction
August 2, 2015 – September 1, 2015	7.1	SW
September 2, 2015 – October 1, 2015	6	S
December 2, 2015 – January 1, 2016	4.2	ESE
January 2, 2016 – February 1, 2016	4.2	SSE
February 2, 2016 – March 1, 2016	2.9	SE
March 2, 2016 – April 1, 2016	5	SSW
April 2, 2016 – May 1, 2016	6	SSW
May 2, 2016 – June 1, 2016	6.9	WSW
June 2, 2016 – July 1, 2016	7	SW
July 2, 2016 – August 1, 2016	6.5	SW
ANNUAL	**5.7**	**SSW**

Source: Weather Underground, July 2015 to August 2016, East Bay Radio Controller Field Station.

TABLE 3 – LOG OF COMMUNITY CONCERNS & COMPLAINTS

DATE	NAME	ADDRESS	PHONE #	CONCERN/COMPLAINT	RESPONSE/ACTION TAKEN

FIGURE 1 – WIND ROSE FOR LIVERMORE, CALIFORNIA, 2006



Source: Western Regional Climate Center, 2006